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NOTES ON *SUCCINEA OVALIS* SAY AND *S. OBLIQUA* SAY.

BY HENRY A. PILSBRY.

Since Gould's publication on the *Succineas* of Massachusetts in 1841, there has been more or less confusion as to the identity of *Succinea ovalis* Say. The facts in the case were pointed out by Dr. Binney in 1851, but unfortunately a faulty manner of correcting Gould's mistake was adopted, resulting in two errors of nomenclature in place of one. Some years ago the writer rectified the current usage, restoring Say's name *ovalis* to its original significance. This correction has been accepted by many recent writers, but there are a few conspicuous exceptions; hence it seems necessary, in the interest of uniform nomenclature, to demonstrate the status of *S. ovalis* by giving its history somewhat fully.

Observations on the mantle-markings of *Succinea*, made in New York several years ago, also find place here. These color markings are shown to be highly variable among individuals of a single colony, yet the general pattern differs to a greater or less extent in different species. The subject is worth further investigation, both from the standpoint of variation and also systematically, as an aid in distinguishing species in this difficult genus.

***Succinea ovalis* Say.**

The actual type or types of *Succinea ovalis* Say are no longer in existence; but three specimens labelled and mounted on a card by Say are extant, representing what he subsequently considered to be *S. ovalis*. The original description must have been drawn from immature individuals, the measurements, "length nine-twentieths of an inch, aperture seven-twentieths," being only about two-thirds to three-fourths the ordinary size attained around Philadelphia. *The proportion of aperture to length given by Say agrees with specimens I have measured, but with no other Succinea of this region.* This common Philadelphian snail, still living in Fairmount Park, is indistinguishable from what Lea subsequently described from Newport, R. I., as *S. totteniana*.

In the *Tableau Systématique de la Famille des Limaçons*, p. 26 (1821), Féruccac records *Succinea ovalis* Say as communicated to him by Say, and figured on plate XI<sup>a</sup>, fig. 1 of the *Histoire*, etc., which was

issued in 1822. The two figures given represent the form now commonly known as "*S. totteniana*" (but properly called *S. ovalis* Say), and still found around Philadelphia. These figures agree perfectly with the specimens labelled by Say in the collection of the Academy. On the same plate Féruccac figures larger forms ("*S. obliqua*" of authors) as varieties of *S. putris* (figs. 7, 8). He also figures large *ovalis* (*totteniana*) from "the islands Miquelon and Saint Pierre, near Newfoundland" (fig. 9).

The species *S. ovalis* was therefore very well figured by Féruccac, from author's specimens, prior to Say's description of *S. obliqua*; and there was but scant excuse for mistaking it, except that but few American workers possessed the large and expensive *Histoire naturelle générale et particulière des Mollusques terrestres et fluviatiles*.

Beck, 1837, and other early European writers accepted the species, referring to Féruccac's figures.

*Succinea ovalis* was correctly recognized also by various early American writers for the form later known as *totteniana*. See DeKay's *New York Fauna, Mollusca*, p. 53, Pl. 4, figs. 51, 52. It was Gould who by error shifted the names, in the first edition of the *Invertebrata of Massachusetts* (1841). He recognized three Succineas in that State:

*S. ovalis*, fig. 125 [= *S. retusa* Lea].

*S. campestris*, fig. 126 [= *S. ovalis* Say = *totteniana* Lea].

*S. avara*, fig. 127 [correctly identified].

Gould subsequently recognized his two mistakes, and finding that the names *S. ovalis* Say, *obliqua* Say and *campestris* Gould, not Say, all applied to one species, he proposed to retain the name *obliqua* for it, and to use "*S. ovalis* Gld. not Say" for *S. retusa*, the snail he had figured in error as Say's *ovalis*.

DeKay, C. B. Adams and Sager, who used Gould's work, were in some measure misled, especially in regard to *S. campestris*. DeKay (1843), as mentioned above, correctly identified *S. ovalis*.

In 1851 Dr. Amos Binney lucidly discussed the American Succineas in Vol. II of the *Terrestrial Mollusks*, pp. 63, 64. His exposition of the history of *S. ovalis* Say leaves little to be desired, and may well be quoted here:

"*Succinea ovalis* Say.—This species, diffused universally in the middle and northern States of the Union, is that which is described in the works of Messrs. Gould, Michels, Kirtland and Sager as *Succinea campestris* Say. It varies much in size, and in the divergence of the last whorl from the axis of the shell, and this last variation when

strongly developed constitutes *Succinea obliqua* Say. *Succinea ovalis* of Messrs. Gould, Adams, Mighels and Sager is not the *ovalis* of Say, but a species which was unknown to him. As, however, the *ovalis* of Gould is that now most commonly known under the name of *Succinea ovalis*, we propose to retain it, and to apply to Mr. Say's species his second name, *obliqua*."

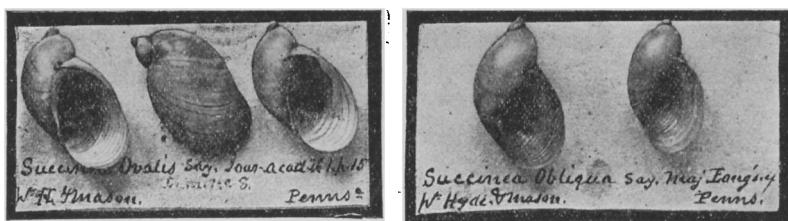


Fig. 1.—Tablet bearing *Succinea ovalis*, mounted and labelled by Thomas Say. Nat. size.

Fig. 2.—Say's tablet of *Succinea obliqua*. Nat. size.

The tablet of three specimens of *S. ovalis* labelled by Say is photographed, fig. 1. A series of modern specimens from Fairmount Park is shown, fig. 3. These show a considerable amount of variation in contour, some being as long as Say's types of *S. obliqua*, shown in fig. 2. Philadelphian examples do not attain a large size, rarely exceeding 16 or 18 mm. in length. It is a region of crystalline metamorphic rock, deficient in lime, where the land shells generally run under the size usual in New York or the West. The color is yellowish green, and the shell very thin.

This type of shell is widely distributed, from Ontario to the mountains of North Carolina and west to Minnesota and Missouri.



Fig. 3.—*Succinea ovalis* Say. Fairmount Park, Philadelphia. Nat. size.

In the examples of *S. ovalis* taken at Chittenango Falls the upper part of the spire in living animals is whitish with a papery appearance, the last whorl is pale buff, becoming olivaceous and dusky over the lung. This is in some examples more or less obscured by a gray network,

marked with some black blotches, but in others there is a pattern of black streaks very much like that of *S. ovalis chittenangensis*. See Pl. VII, figs. 9, 10, 11, (No. 90,084, 90,085 A. N. S. P.)

*Succinea obliqua* Say, 1824, also was described from Philadelphia, two cotypes mounted on the cards used by Say, and inscribed with his autograph label, being still preserved. They are photographed in fig. 2. These specimens have the spire longer than in *ovalis*, the suture more oblique, but are otherwise very similar. They are greenish-yellow, though not quite so green as *ovalis*, and the abundant series of other Philadelphian specimens before me leaves no doubt that they intergrade perfectly with Philadelphian *ovalis*. It will not, I think, be possible to use the name *obliqua* in a varietal or subspecific sense, though it might be used to indicate the elongate phase or form which the species often assumes, if a name for that be desired.<sup>1</sup> It must be understood, however, that the longer phase occurs with the shorter typical *ovalis*, and is fully connected therewith by intermediate individuals in the same colonies.

The synonyms of *S. ovalis*, and early references thereto discussed above, here follow:

*Succinea ovalis* Say, Journ. A. N. S. Phila. I, 1817, p. 15. Féruccac, Tabl. Syst., 1821, p. 26; Hist. Nat. Moll. Terr., Pl. XI<sup>A</sup>, fig. 1 (not *S. ovalis* Gould).

*Succinea obliqua* Say, Major Long's Second Exped., II, 1824, 260, Pl. 15, fig. 7. DeKay, New York Fauna, Moll., p. 53, Pl. 4, fig. 53. Binney, Terrestr. Moll., II, p. 69.

*Succinea campestris* Gould, Invert. of Mass., 1841, p. 195, fig. 126. DeKay, New York Fauna, Moll., p. 53, Pl. 4, fig. 54 (not *S. campestris* Say).

*Succinea totteniana* Lea, Proc. Am. Philos. Soc., II, 1841, p. 32.

*Succinea ovalis optima* n. subsp. Fig. 4.

In many localities from New York to Minnesota and Iowa a form much more robust than typical *ovalis* is found. The shell has coarser wrinkle sculpture, and yellow predominates rather than green. The contour is about that of the larger examples of *ovalis* (such as those Say called *S. obliqua*), but varies to nearly or quite as broad as typical *ovalis*. The suture is deep, and at the last whorl oblique. The largest specimens I have seen are from the type locality, Crugers Valley, near Upper Red Hook, Dutchess Co., N. Y., collected by Mr. W. S. Teator. Two of them measure:

<sup>1</sup> *S. greeri* Tryon has been quoted as a synonym of *S. obliqua*, but it is certainly distinct from that species.

Length 26, diam. 16, length of aperture 18 mm.

" 25 " 13.5 " " 17.5 "

This size is not often reached. In the middle West a length of 20 mm. is near the maximum, and the size of some individuals which seem to be adult is not greater than the largest of the typical form of *S. ovalis*.

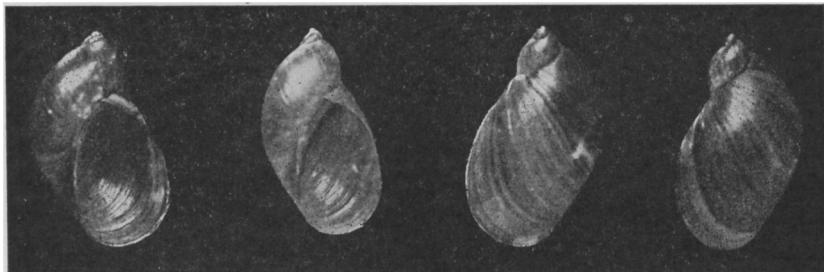


Fig. 4.—*Succinea ovalis optima*. Nat. size.

This large race is what has commonly been called *S. obliqua* Say, but the true *obliqua* is merely the longer phase of typical *ovalis*, and the name is not fairly applicable to the form above described. I have not examined the living animal of this race.

I picked up a single bleached specimen of *S. o. optima* on the beach at Galveston, Texas, in 1886. It had probably floated there, as I do not think it exists in the Austroriparian zone.

***Succinea ovalis chittenangoensis* n. subsp. Pl. VII, figs. 1 to 8.**

The shell is yellow or pinkish-yellow, much lengthened, with a longer spire than any other race of *S. ovalis*; suture deep; whorls  $3\frac{1}{2}$ , the last rather flattened above, not so convex there as in *S. ovalis* or *S. o. optima*. Aperture very oblique, relatively small.

Length 22.5 diam. 11.5, length of aperture 14 mm. (No. 90,087).

" 23.3 " 11.3 " " 14 " (No. 90,081).

" 21 " 11.3 " " 13 " (No. 90,079).

" 19 " 10.5 " " 12 " (No. 90,083).

Cotypes from a sloping weed-covered talus near the foot of Chittenango Falls, Madison Co., N. Y., No. 90,087, 90,081 and 90,079, A. N. S. P., collected August 27, 1905, by Messrs. Henderson, Walker, Clapp and Pilsbry.

A very large series was taken, associated with a few *S. ovalis*, from which they are easily separated by the characters given above. I have seen this form from nowhere else. The locality is on the Onondaga limestone (coniferous).

In the living animal the mantle as seen through the shell is pale yellow with a slight olive tint, olive over the lung; the apex is more or less ruddy. This ground is profusely striped and blotched with black on the last  $1\frac{1}{2}$  whorls, as shown in figs. 1 to 5. Over the kidney the black blotches are interrupted and the ground tint is lighter, making a light streak across the whorl, partially seen in figs. 2 and 5 at the right upper portion of the last whorl. Very exceptionally the black blotches are almost absent, as in figs. 6, 7, 8. Fig. 8 represents the least marked individual seen, and probably to be regarded as a case of partial albinism. The lower edge (collar) of the mantle is gray peppered with white dots. The foot is pale yellowish, back and flanks gray with slate tessellation, tentacles slate. The posterior end of the foot is somewhat blackish above. All figures of plate VII were drawn from living animals. In alcohol the black and gray pigment remains, but

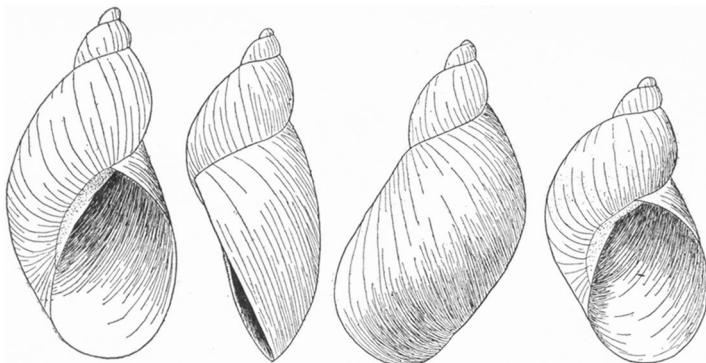


Fig. 5.—*S. ovalis chittenangoensis.*  $\times 2$ .

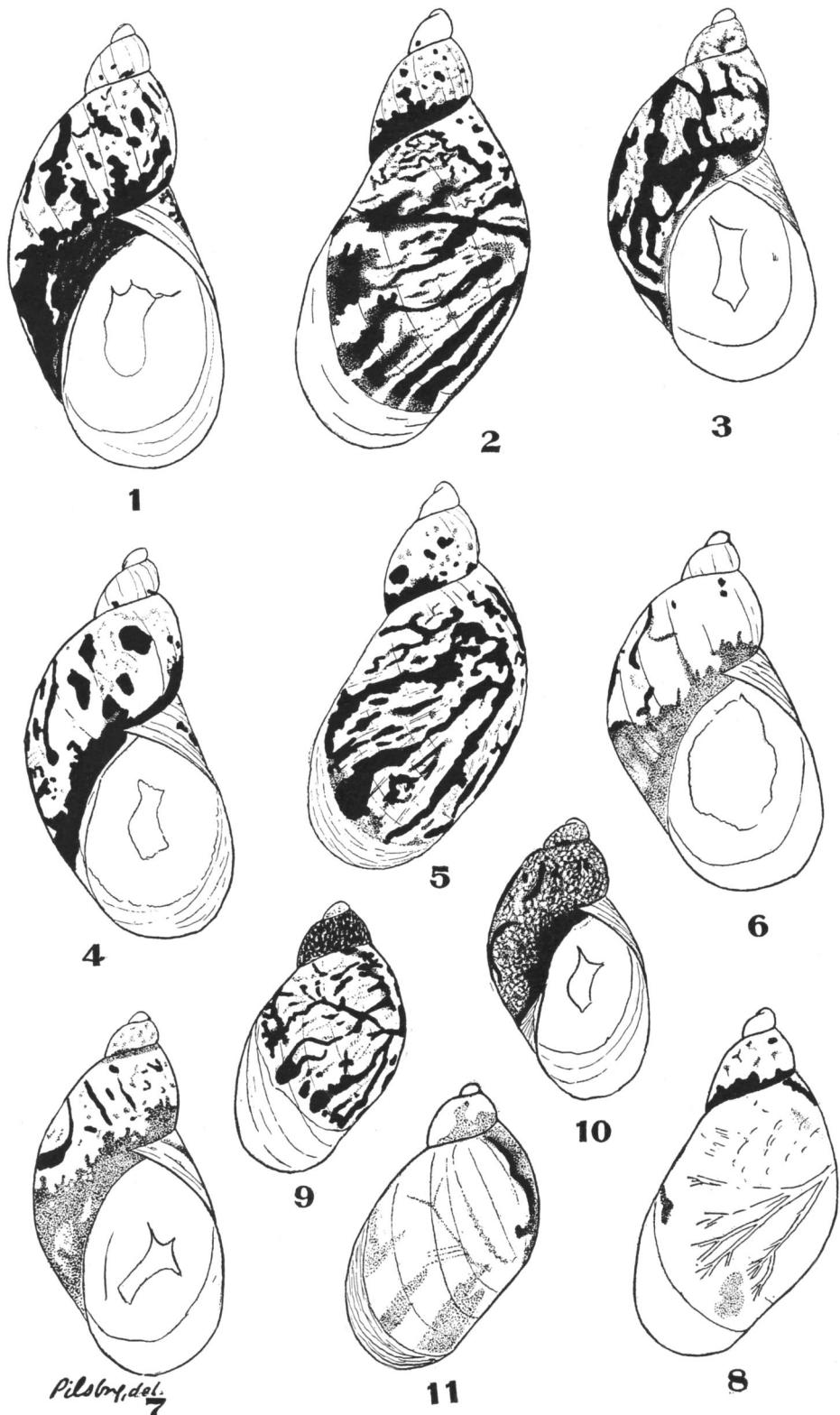
the yellow tint is fugitive. The pattern of pigmentation of the lung has clearly been influenced by a tendency of the markings to follow veins; but in many specimens this tendency has been lost to a great extent.

*Summary.* (1) *Succinea ovalis* Say was based upon Philadelphian specimens of the form subsequently described as *S. totteniana* Lea. It was well figured by Féruccac from examples sent by Say, as early as 1822. The proportion of aperture to length given by Say applies to no other *Succinea* of the region about Philadelphia. (2) *Succinea ovalis* Gould, 1841, is a totally different species, which was described as *S. retusa* by Lea in 1837. The true identity of *S. ovalis* was recognized by Dr. Binney in 1851. (3) *Succinea obliqua* Say, 1824, was based upon elongate specimens of *S. ovalis* Say, also from Philadelphia. It

is an absolute synonym of *S. ovalis*. (4) *S. totteniana* Lea and Binney is absolutely identical with the typical *S. ovalis* Say.

#### EXPLANATION OF PLATE VII.

Figs. 1-8—*Succinea ovalis chittenangoensis* n. subsp. 1, 2, No. 90,081 A. N. S. P.; 3, No. 90,079; 4, 5, No. 90,080; 6, No. 90,083; 7, 8, No. 90,082.  
Figs. 9-11—*Succinea ovalis* Say, Chittenango Falls. 9, 10, No. 90,085; 11, No. 90,084.

PILSBRY ON *SUCCINEA OVALIS*.